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ABSTRACT

Specifically designed to assist child care food service personnel in providing wholesome food in a safe and sanitary manner, this sanitation guide interprets and expands on Chapter HSS 55 of the Wisconsin Department of Health and Social Services' code for licensing activities. Following a brief introduction, chapters 2 through 7 focus on bacteriology and food-borne illness, basic sanitation in relation to phases of food service operation, personal hygiene for food service personnel, insect and rodent control, use of safety and sanitation checklists, and inservice training. Related books, bulletins, manuals and unpublished materials are listed in a brief bibliography. Extensive appended materials provide (1) a list of sources for audiovisual aids; (2) a chart which indicates both the storage life of various foods in cool storerooms, refrigerators and freezers and the signs by which personnel can recognize foods with reduced quality; (3) a chart listing the approximate storage life of various foods at 0 degrees Fahrenheit; (4) examples of subject outlines for inservice training in the areas of food-borne diseases, storage facilities preparation, mechanical dishwashing, manual sinks and personal hygiene; (5) prototypes for use with overhead projectors; and (6) safety and sanitation self-inspection sheets. (Author/RH)

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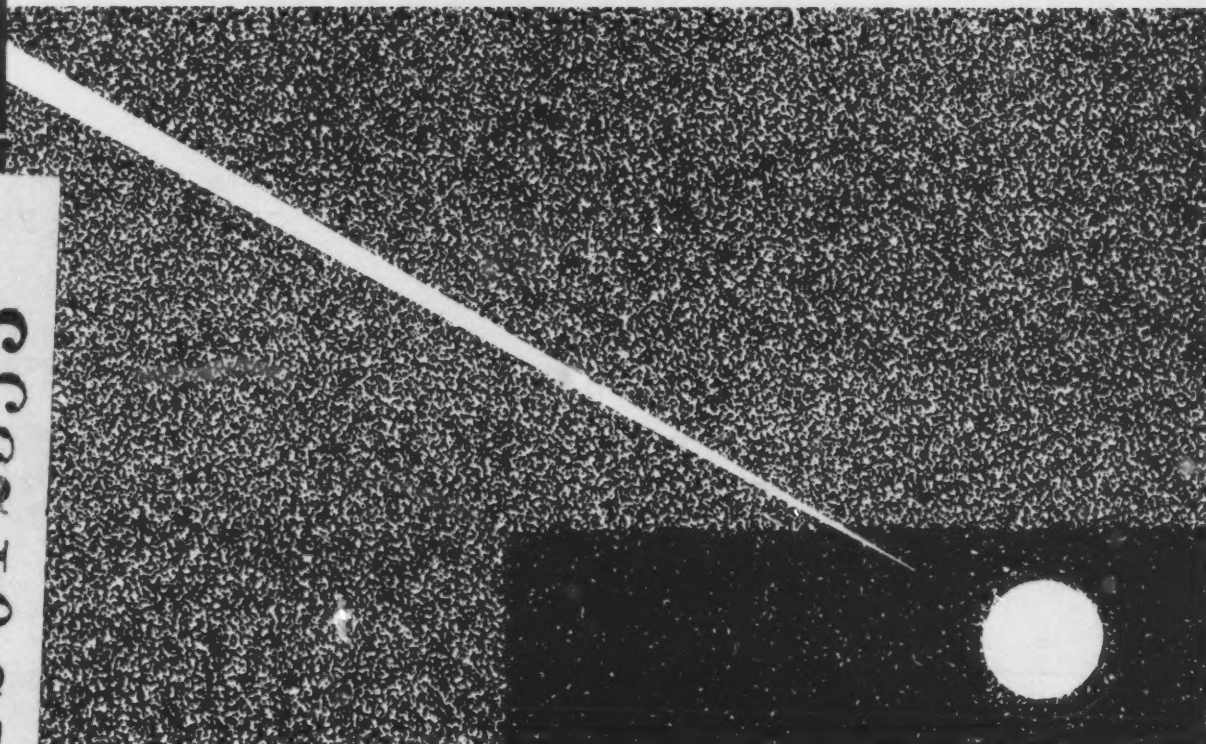
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SANITATION PRACTICES FOR DAY CARE

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SANITATION PRACTICES FOR DAY CARE

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Chapter I

INTRODUCTION

Sanitation Practices for Day Care is for Child Care Center food service operations in Wisconsin and is designed to assist food service personnel in the provision of wholesome food in a safe and sanitary manner. Child Care Centers have an important responsibility to see that all foods made available to children while under their care are nutritionally sound and prepared under sanitary conditions.

The Wisconsin Department of Public Instruction has the responsibility to monitor centers participating in the Child Care Food Program. As part of the monitoring responsibility, this Department observes sanitation practices and procedures. Since this Agency is not directed specifically by the Laws of Wisconsin to monitor sanitation, our sanitation observations are conducted in conformance with Chapter HSS 55. HSS 55 is the code for licensing activities conducted by the Department of Health and Social Services.

Sanitation Practices for Day Care interprets and expands upon Chapter HSS 55. It provides food service personnel with a thorough, easy to understand guide. Its purpose is to assist Child Care Centers in carrying out the necessary practices and procedures to insure sanitary food service. It is a sanitation guide specifically designed for centers.

— R. A. Mortensen —

Chapter II

BACTERIOLOGY & FOOD-BORNE ILLNESS

Basic Bacteriology

Bacteria are very small, single-celled, living organisms that are found everywhere. They vary in both size and shape. Lengths range from two to ten microns and widths range from one-half to two microns. One micron equals 1/25,400 inch.¹ Some species are round (cocci), others are rod shaped, and still others are spiral shaped. The only way to view the cells is through the use of a microscope.



Cocci



Rod Shaped



Spiral Shaped

ILLUSTRATION 1
SHAPES OF BACTERIA

Bacteria are living cells that can take in food, produce waste products, multiply, and eventually die. They reproduce by simply splitting into two cells. This takes approximately 20-25 minutes and continues as long as the environmental conditions remain favorable. One bacteria cell can multiply and produce 281,000,000,000,000 cells in 24 hours!²

During multiplication, some species of bacteria produce poisonous by-products or toxins that are released into the food. These toxins vary in their effect upon man when consumed. Some cause minor gastrointestinal upsets while others cause serious illness, or even death.

In order for the bacteria to survive, grow, produce toxins, and multiply, they must have food, moisture, and the proper temperatures. Air is necessary for some species, but others do not require it.

FOOD

Those species of bacteria that cause food-borne illnesses generally prefer nonacid foods. These include those foods high in protein, such as meat, poultry, fish, milk and eggs.

MOISTURE

In order for bacteria to grow, they need moisture.

TEMPERATURES

Most bacteria grow best at warm temperatures ranging from 60° to 120°F. Those causing diseases grow best near body temperatures. If the temperature is below 40°F., the bacterial cells do not multiply. They do not die but rather seem to go into a state of hibernation. When the temperatures go up, they reactivate

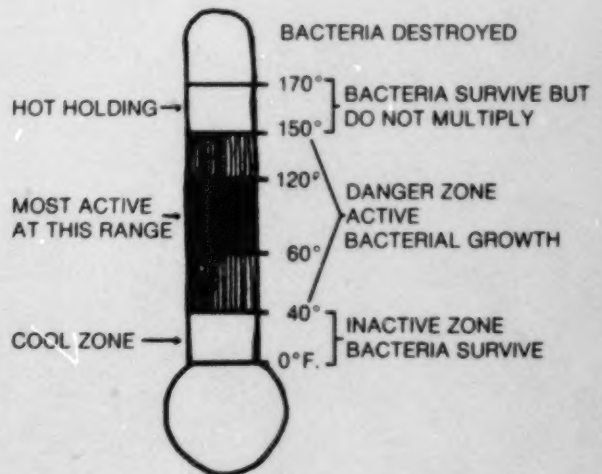


ILLUSTRATION 2
THERMOMETER RELATING TEMPERATURE
& BACTERIAL GROWTH

1. Karla Longree, Quantity Food Sanitation, Chapter II. New York, New York, Wiley Interscience, 1972, p. 7.

2. What Every Homemaker Should Know About Food Germs. A Scriptographic Booklet, Greenfield, Massachusetts, Channing L. Bete Co., Inc., 1977, p.2.

and can start multiplying again. If the temperatures rise to above 150°F., the cells no longer grow. At 170°F or more, most harmful species of bacteria are destroyed. The temperature range that allows bacterial growth (40° to 150°F.) is known as the *Danger Zone*. Thus, in order to prevent bacterial growth and multiplication, foods must be kept at temperatures below 40°F. or above 150°F.

Not all species of bacteria are harmful. Some species actually are beneficial to man. For instance, bacteria are necessary in order for man to produce cheese, sauerkraut, and pickles. Those species that are neither helpful nor harmful are known as benign bacteria. Bacteria that cause food to decompose are known as spoilage bacteria. Those species that cause illness and are our major concern are known as pathogenic bacteria.

Food Poisoning and Food Infection

Food poisoning is caused by a poison or a toxin that the bacteria has released into the food. Food infection is not caused by a toxin. Instead, the bacteria set up an infection in the gastro intestinal (G I) tract of man after their consumption. Bacteria must be given a chance to multiply in food in order to produce large enough numbers to cause a reaction. In both cases, the typical reaction after consumption is a violent upset of the stomach and intestinal area. Variations in time of onset and degree of reaction depend on:

1. The type of organism
2. The degree of susceptibility
(the young, the sick, and the aged are more susceptible)
3. The amount of toxin or number of bacteria eaten
(the greater the amount or number, the faster and more severe the onset)

Food can be contaminated by bacteria in a variety of ways. Most of the diseases transmitted are of the respiratory tract or of the intestinal tract of man. Thus the food service worker is the most important link. Bacteria common to the respiratory tract are transmitted through droplets that are released during sneezing or coughing. Handkerchiefs that are misused also spread these bacteria. Unwashed hands are a major vehicle of transmission. Bacteria that cause diseases of the G I tract are spread by hands that have not been washed after visiting toilet facilities.

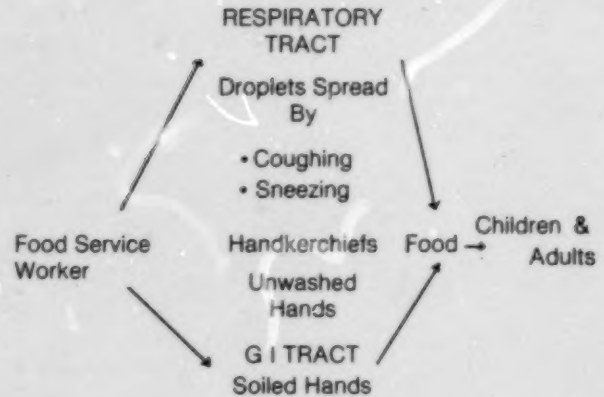


ILLUSTRATION 3
SPREAD OF BACTERIA

Besides the above direct ways bacteria are transmitted from man to food, there are other indirect routes of transmission. Some are:

1. Sewage
2. Water, soil and food polluted by sewage
3. Insects
4. Rodents
5. Other animals
6. Towels
7. Contaminated utensils
8. Contaminated equipment

Food-Borne Illnesses

Toxins may be produced by bacteria in foods that are improperly handled, or prepared, stored, and served at temperatures within the *Danger Zone*. Three food borne-illnesses are produced by toxins.

1. *Staphylococcal poisoning (Staph)*

Incidence: Common.

Cause: Toxins produced by bacteria that are found in nose, throat and skin infections. Toxins not destroyed by cooking.

Common

Foods: Meat dishes (especially those handled a great deal), cream foods, gravies, sauces.

Symptoms: Occur within 2 to 6 hours after consumption. Nausea, vomiting, diarrhea, cramps. Duration of not more than a day or two.

Prevention: Store foods at or below 40°F. and above 150°F. Exclude food service workers with respiratory illnesses and infected sores. Chill foods rapidly.¹

2. Botulism

Incidence: Rare.

Cause: Toxin produced by bacteria in absence of air. Toxins destroyed by heating to boiling.

Common

Foods: Underprocessed, home-canned, nonacid foods; smoked fish.

Symptoms: Occur 12-36 hours after consumption. Nausea, vomiting, headache, dizziness, double-vision; progressive respiratory paralysis. Fatal in 3-10 days. Fatality Rate: 50-65%.

Prevention: Don't serve home-canned foods! Discard suspected foods.²

3. Perfringens Food Poisoning

Incidence: Common, gaining in incidence.

Cause: Bacteria found almost everywhere - grow without air and resistant to heat.

Common

Foods: Meat and gravy, soup, and stews all held at inadequate temperatures or allowed to cool slowly.

Symptoms: Appear 8-24 hours after eating food. Nausea, diarrhea, inflammation of stomach and intestines. Duration of one day or less.

Prevention: Chill foods quickly and keep refrigerated. Keep equipment clean. Practice good personal hygiene.³

There are several important food-borne illnesses that are caused by the presence of the harmful bacteria in the food. They are:

1. Salmonella food Infection

Incidence: Common.

Cause: Bacteria are widespread. Live in intestine of humans and animals.

Common

Foods: Meats, pork, poultry, and fish; eggs and egg products; baked goods with cream fillings.

Symptoms: Appear 12-36 hours after consumption. Headache, abdominal pain, vomiting, fever, diarrhea. Duration of several days.

Prevention: Wash hands often. Strict personal hygiene. Control rodents and insects. Keep equipment clean.⁴

2. Streptococcus Food Infection

Incidence: Rare.

Cause: Bacteria found in intestinal tracts of humans and animals. Food must be contaminated with feces. Large numbers of bacteria must be present.

Common

Foods: Meats, sausage, poultry, cream-filled pastries, pudding.

Symptoms: Onset 2-36 hours. Nausea, vomiting, colic-like pains, diarrhea. Relatively mild.

Prevention: Prevent fecal contamination. Keep foods properly refrigerated or heated. Cook foods thoroughly. Thoroughly wash hands and equipment after working with raw meat.⁵

3. Bacillus Cereus (Gastro Enteritis)

Incidence: Becoming more common.

Cause: Bacteria found in soil and dust.

1. Frank L. Bryan, Diseases Transmitted by Foods. HEW Publication No. (CDC) 78-8237, 1978, page 3.

2. Ibid.

3. Ibid.

4. Ibid, page 2.

5. Ibid., page 8.

Common

Foods: Custards, sauces, puddings, fried rice, and cereal products.

Symptoms: Incubation period of 8-16 hours. Nausea, diarrhea, abdominal cramps, some vomiting. Short duration of one day or less.

Prevention: Chill foods rapidly. Practice good personal hygiene. Hold hot foods at 150°F. or above.¹

In addition, there are several more diseases worth mentioning that are caused by contaminated food. They are:

1. Trichinosis - parasite disease

Incidence: Becoming less prevalent.

Cause: Roundworm larva in muscle tissue.

Common

Foods: Raw or undercooked pork.

Symptoms: Incubation period of 4-28 days. Vomiting, diarrhea, fever, muscular pain. Duration of usually nine days.

Prevention: Thorough cooking of pork to 150° or above.²

2. Infectious Hepatitis

Incidence: Rare.

Cause: Virus originating in feces, urine, and blood of infected human.

Common

Foods: Shellfish, milk, orange juice, cold cuts, whipped cream cakes, and potato salad.

Symptoms: Onset 10-50 days, usually 30 days. Fever, nausea, weakness, abdominal pain, then jaundice. Injury to liver. Duration of few weeks to several months.

Prevention: Cook shellfish thoroughly. Use uncontaminated water. Good personal hygiene.³

3. Shigellosis - Bacillary dysentery

Incidence: Rare.

Cause: Bacteria found in feces of infected humans transmitted by contaminated food and water.

Common

Foods: Milk, beans, meat and macaroni, potato, tuna and turkey salads.

Symptoms: Onset in 1-7 days, usually less than 4 days. Diarrhea, fever, cramps, chills, dehydration — extremely variable in severity.

Prevention: Sanitary food and water sources. Good personal hygiene. Safe food handling. Cook foods thoroughly. Chill foods rapidly. Control flies.⁴

Diseases Transmitted Via Food

In addition to the above mentioned food-borne illnesses, there are other diseases that are transmitted via food. Generally, they originate from either of two sources - the respiratory tract or the gastro-intestinal tract. Some of the more common diseases that are transmitted from the respiratory tract via foods to other persons are colds, septic sore throat, scarlet fever, measles, mumps, pneumonia, and influenza. Diseases that can be traced back to the intestinal tract include typhoid fever, several varieties of dysentery and infectious hepatitis. Food must be protected during all phases from possible contamination by disease-causing bacteria from the respiratory and the intestinal tracts.

The following list provides you with basic principles to prevent contamination:

1. Do not sneeze or cough directly over food or food contact surfaces.
2. Thoroughly wash hands after sneezing, coughing, handling handkerchiefs, or scratching nose.
3. Do not reuse handkerchiefs - use disposable tissues. (Use once, then discard.)
4. Keep fingers out of mouth.
5. Thoroughly wash hands after each visit to the restroom.

1. Frank L. Bryan, Diseases Transmitted by Foods. HEW Publication No. (CDC) 78-8237, 1978, page 4.

2. Ibid., page 14.

3. Ibid., page 11.

4. Ibid., page 5.

Chemical Poisoning

Chemical poisoning is not a common occurrence. Usually this occurs because of neglect or disorder. For instance, cleaning compounds, pesticides, polishes, and similar products are stored in the same general area as food products and may be unlabeled. The food handler mistakenly grabs the toxic substance for use in preparation. Contamination results. Never store chemi-

cals in the same area as foods. Always properly and clearly label these products.

Metals may get into foods if unsuitable utensils are used. Cadmium, antimony, lead, zinc, and occasionally copper can cause food poisoning. Be very careful with grey enamelware, galvanized containers, and work pots and pans. Do not use these utensils when working with high acid foods.

Factors that Contribute to Food-Borne Outbreaks¹

Obtaining food from unsafe sources:

- 1) Using home-canned goods
- 2) Purchasing raw milk and milk products
- 3) Purchasing cracked eggs

Failure to properly refrigerate foods:

- 1) Allowing foods to remain at room temperatures
- 2) Cooling and storing foods in large quantities in coolers
- 3) Allowing foods to cool to room temperature, then refrigerating
- 4) Storing foods for great lengths in refrigerators that are operating at above recommended temperature levels (above 40°F)

Poor storage practices:

- 1) Storing foods under dripping pipes
- 2) Storing pesticides or chemicals in same areas
- 3) Allowing rodents or insects to gain entry into storage areas

Mistaken addition of toxic substances

For example:

- 1) Pesticides
- 2) Cleaning compounds

Storing or cooking acid foods in utensils made of toxic materials

Storing homemade orange juice or other acid drinks in galvanized zinc cans, cadmium containers, earthenware pots and pitchers, or cheap, grey enamel cookware

Preparing foods hours or days in advance of service:

- 1) Improperly preparing, handling, and holding foods
- 2) Improper handling and heating of leftovers

Failure to thoroughly cook contaminated foods

Inadequately cooking certain foods (i.e., poultry with stuffings, frozen foods, casseroles) because of the length required:

- a) Bacteria spores present can survive cooking
- b) Certain toxins are not destroyed by cooking (i.e., staph)

Adding contaminated foods to other foods that are not subsequently cooked

For example, the use of cracked eggs when making eggnog or ice cream has led to numerous outbreaks.

Having foods at warm, incubating temperatures

Holding foods for extended periods of times in equipment maintaining temperatures less than 150°F. For example:

- a) Steam tables
- b) Transport equipment
- c) Ovens

Cross contamination:

- 1) Failure to properly clean and sanitize work surfaces and utensils after handling raw foods
- 2) Failure to wash hands after handling raw foods, then touching prepared foods
- 3) Failure to change contaminated plastic gloves

Failure to properly clean and sanitize equipment after use

Failing to clean and sanitize cutting boards, knives, utensils, slicers, mixers, mixer attachments, grinders, etc.

Allowing infected employees to work

Allowing employees with diarrhea, fever, sore throat, colds, infected wounds, and/or boils to work

1. Frank L. Bryan, Control of Foodborne Diseases in the Food Service Industry. HEW, Public Health Service, page 20.

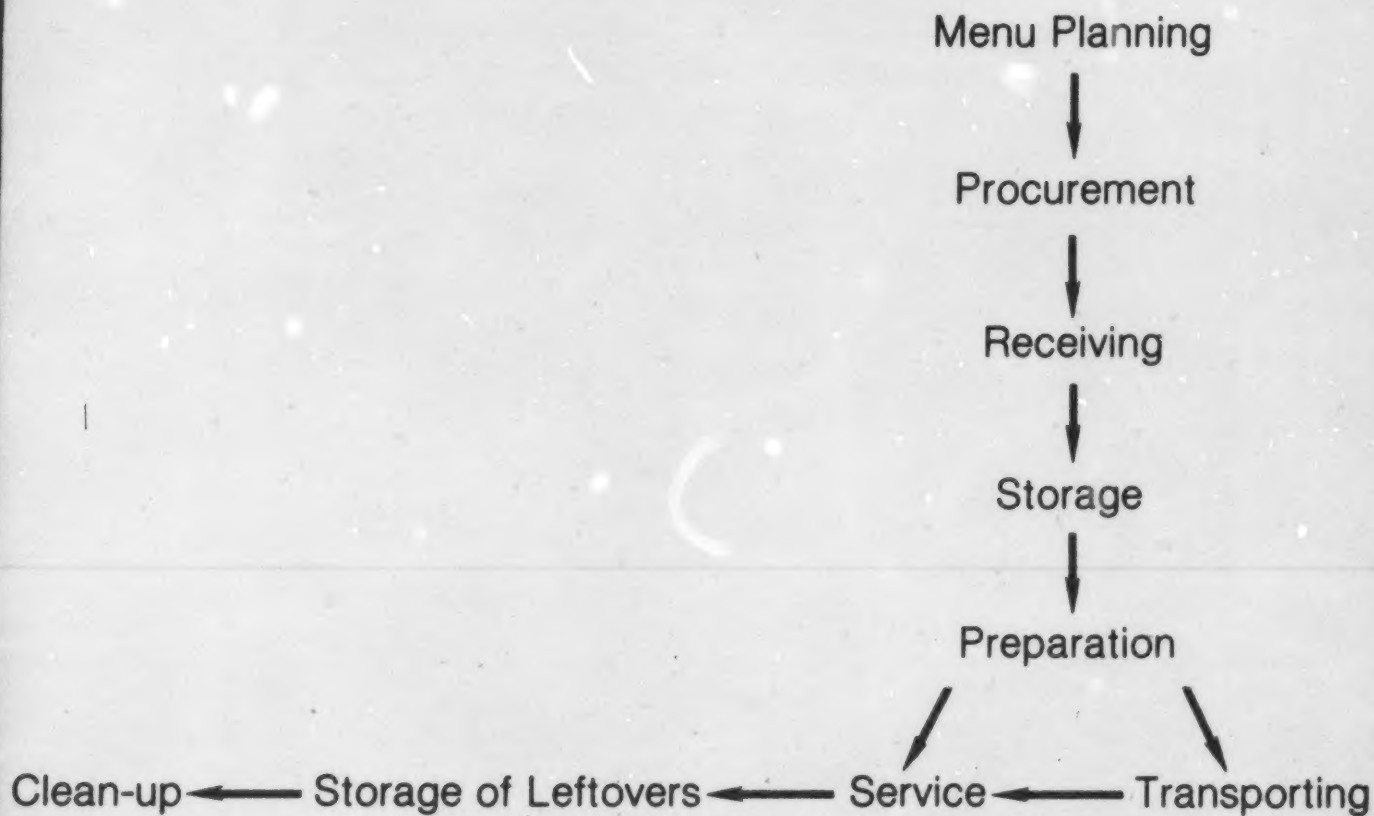


ILLUSTRATION 4
PHASES OF OPERATION

Chapter III

BASIC SANITATION IN RELATION TO PHASES OF OPERATION

Procurement and Receiving

A sound food supply is a good, positive start towards an effective sanitation program. The person responsible for procuring the foods for the child care feeding program has an important role. Specifications should reflect exactly what you want and how you want it packed to assure wholesomeness. The foods delivered should meet those established standards of quality as described by your specifications. It is recommended that canned and pre-packaged foods be identified with the manufacturer's, processor's or distributor's name and the list of contents or product name. Look for the USDA inspection stamp or label on your meat and poultry products. Do not use home-canned goods—only those commercially processed may be used (HSS 55.33 (4) (c) 5). Buy only pasteurized Grade A milk. (HSS 55.33 (4) (c) 2). Do not purchase or use food from dented, bulging or leaking cans (HSS 55.33 (4) (c) 4). Food from these cans may be potentially dangerous. If dents occur along seam lines, the seal may be broken. Thus air and bacteria could enter and contaminate the food. A can that has a leak may also allow bacteria to enter the can and spoil the food. One indication of bacterial action is a bulging can. Foods shall be procured from reputable vendors that are approved or considered satisfactory by the health authorities. (HSS 55.33 (4) (c) 1).

When deliveries arrive, they should be carefully examined and compared with the delivery slip. Check for evidence of spoilage or insect or rodent infestation. When frozen foods are delivered, check for signs of softness or thawing. If these conditions exist, shipment should not be accepted. Sign the delivery vouchers only after each item has been examined and found to be in good order. You should not accept anything you are leary of.

Storage Facilities

Dry Storeroom

This area should be cool, dry, clean, and well lit and ventilated. A thermometer should be installed. The recommended temperature range is 50° - 70°F. The temperature should be checked periodically. The rela-

tive humidity should range between 50 to 60 percent. Good ventilation is essential to maintain constant temperatures. Food should be stored away from walls, not under any dripping pipes and off the floor on skids, pallets, or dollies. These precautions prevent contamination, allow for proper air circulation, and allow for easy cleanability of floor surfaces. If the dry storage area is in a basement, food shall be stored at least eight inches off the floor. (HSS 55.33 (4) (d) 2b). Those staples and dry goods (i.e. flour, sugar, rice, cereal, beans, etc.) shall be stored in metal, glass or food grade plastic containers with tight fitting covers and shall be labeled (HSS 55.33 (4) (d) 2a). Always date foods so they can be used on a first-in, first-out basis. Poisonous and toxic materials (i.e. cleaning supplies, bleaches and insecticides) shall be labeled and stored in cabinets used for no other purpose (HSS 55.33 (4) (e) 1). Do not store these supplies near food. Many foods absorb odors, including those given off by these chemicals.

The following chart depicts a variety of food items and their ability to absorb or to give off odors.

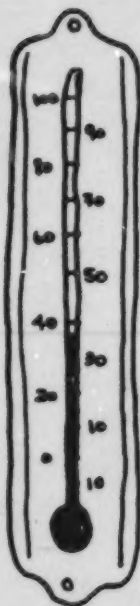
TABLE I
Food and Odors¹

FOOD	GIVES OFF ODORS	ABSORBS ODORS
Apples, Fresh	Yes	Yes
Butter	No	Yes
Cabbage	Yes	No
Cheese	Yes	Yes
Cornmeal	No	Yes
Eggs, Dried	No	Yes
Eggs, Fresh Shell	No	Yes
Flour	No	Yes
Milk, Nonfat Dry	No	Yes
Onions	Yes	No
Peaches, Fresh	Yes	No
Potatoes	Yes	No
Rice	No	Yes

1. USDA. Food Storage Guide for Schools and Institutions. Washington D. C., Food and Nutrition Service, 1975, p. 27.

Refrigerators

The refrigerators in your kitchen should be well maintained and clean. A thermometer shall be installed (HSS 55.33 (4) (d) 1c) and checked daily. The recommended temperature range is 34° - 40°F. To allow air to properly circulate and to promote rapid cooling:



1. Do not store food directly on the floor—it should be 6 to 8 inches off the floor. (If wooden pallets are used, be sure they are sealed to prevent them from absorbing any spilled liquids.)
2. Use slatted or wire shelving that is noncorrosive, non-porous, and easily cleanable. Do not use solid shelving and do not line shelving. Solid shelving prevents proper air circulation and thus cooling.
3. Store food in shallow pans to promote faster cooling.
4. Allow space between food items.
5. Do not store food in paper boxes because paper is a good insulating material and does not allow fast cooling.

This storage area should be checked regularly for spoiled foods and any debris, objectionable odors, and signs of mold. A regular cleaning schedule should be established so that the floor area, shelving units, and walls are kept clean and well maintained. Be sure to put food into a container before storing on shelves. Food shall be covered before placing in cooler to prevent absorption of other odors, drying out of surfaces, and possible contamination from containers on above shelves (HSS 55.33 (4) (d) 1d). Never store cooked foods below thawing or raw foods. Date foods so you can use it on a first-in, first-out basis.

Freezers

Freezers should be clean and well maintained. Thermometers shall be installed (HSS 55.33 (4) (d) 1c) and should be checked daily. The freezer shall be maintained at a maximum temperature of 0°F (HSS 55.33 (4) (d) 1b). Frozen foods should also be stored on pallets or dollies off the floor surface and away from the walls to promote proper air circulation. All food items should be dated when they are received so that they can be rotated properly on a first-in, first-out basis. Frozen foods can be left in their original shipping containers.

Food storage charts depicting the recommended storage life in the three different storage areas are included in the Appendix.

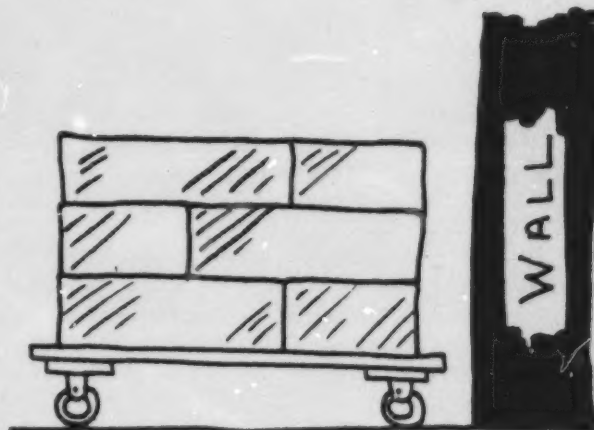


ILLUSTRATION 5
STORE FOODS OFF THE FLOOR
AND AWAY FROM THE WALLS

Preparation

Start with Wholesome Materials Begin preparation with wholesome food and materials. Check all cans before opening for corroding seams, bulging ends, and dents along seams. Wash the tops of the cans. After opening, check for any off-odors, discolorations and changes in liquid portion (foaminess, milkiness, etc.). Be sure the meat products are not spoiling. Indications include off-odors and slimy surfaces. If any food has an off-odor, is cloudy in appearance, or is moldy, you should not use it. If you are suspicious of any food, do not taste it — throw it away.

Wash Foods Some foods must be thoroughly washed to remove soil and bacteria. Those included in this group are all fresh fruits and vegetables that are to be eaten raw or cooked (HSS 55.33 (4) (f) 1), dried fruits and raisins, and raw poultry and fish. This is especially true of the cavity of poultry since it may be extremely rich in salmonellae bacteria. Lukewarm running water should be used to wash fruits and vegetables; then rinse with cold running water and allow to drain. If insect infestation is suspected, allow the fresh vegetables to soak in cold, salted water for about 20 minutes. The insects will rise to the top of the water and can be skimmed off. Poultry and fish should be washed shortly before cooking. A lukewarm wash with a cold rinse following is usually recommended. Again, allow these items to drain well.

Protect Food from Contamination Be sure all chemicals are properly labeled and stored away from

Broken glass is a potentially dangerous contaminant. It is strongly recommended that lighting fixtures directly over food preparation surfaces have protective shielding to prevent broken glass from falling into food.

Wash and sanitize equipment and work surfaces before use. This is also true when changing operations, or in between operations. A simple rule of thumb is always clean and sanitize the food contact surfaces after handling raw foods before you handle cooked foods. The cooked foods could become recontaminated with the bacteria present on or in the raw foods. A sanitizing solution could be one made with chlorine bleach and water (200 ppm) or one made with an approved sanitizer and water. Keep separate buckets and cloths for wash and for sanitizing. Otherwise, cross-contamination could occur. Change the wash and sanitizer waters and cloths often.

Wash hands frequently. Wash them after visiting the restroom, using handkerchiefs, sneezing, coughing, between operations, touching raw foods, and whenever you begin something new.

Food should always be protected from dust, insects and rodents. For more information see Chapter IV.

If the food item is going to be handled several times, special care must be taken. (Handling can include assembling, slicing, grinding, and/or deboning.) Do not allow the food to remain at room temperatures for extended periods of time. The bacteria present will grow and multiply rapidly. When assembling foods, you may wish to wear disposable plastic gloves. NEVER wash these gloves for reuse. Bacteria can survive & grow on food found on the gloves. They are designed for a one-time use only. If mishandled, these gloves can contaminate the food.

Thoroughly Heat Foods Certain food products can be assumed to contain food-borne illness causing bacteria. These foods can be categorized into four groups:

- I. Raw Meats
- II. Raw Poultry
- III. Cracked Eggs
- IV. All Foods (raw or cooked) that have been Handled by Either Hands or Machines

Foods should be heated to 170°F. to destroy any bacteria that might be present. Be sure to stir foods so that the central mass reaches this temperature. Use a thermometer to check the temperature. Remember to sanitize your thermometer before using.

Prevent Multiplication and Growth of Bacteria Bacteria grow and multiply over a wide range of temperatures. This range is known as the Danger Zone, 40° to 150°F. It is impossible for you to prevent food from being handled within this range. However, you can limit the amount of time that the food is exposed. Food should not be held in the 60° to 120°F. range for longer than

two hours. This includes the cooling and preparation time. This applies to each ingredient in the preparation of an uncooked salad and the serving time of that salad. Properly thaw frozen foods. Plan ahead and get the required foods out of the freezer in advance and thaw these items in the coolers. Some foods may be safely thawed under cold running water. Some foods may also be cooked from the frozen state. Never thaw foods at room temperatures. Do not refreeze thawed foods. Cook it first, then refreeze it if necessary.

Chill foods as quickly as possible. DO NOT allow any food item to cool to room temperature first. This allows the food to travel slowly through the Danger Zone and allows any bacteria present to multiply. Put all foods in the refrigerator to cool. Use smaller containers and shallow pans. This permits the foods to cool faster.

Do not allow foods to remain at room temperatures for extended periods of time while you are actually involved with preparation. Be sure that those cold food items on your menus (i.e., salads, sandwiches) are prepared with chilled ingredients and then held in the coolers until needed. Plan your work schedules accordingly so food is exposed to warm temperatures for only that time while you are actually working with it. When food is cooked, all or most of the bacteria are killed. If food is insufficiently cooked or recontaminated, bacteria will grow very quickly because of little competition.

Whenever holding hot foods, maintain the temperature at a minimum of 150°F. However, the recom-

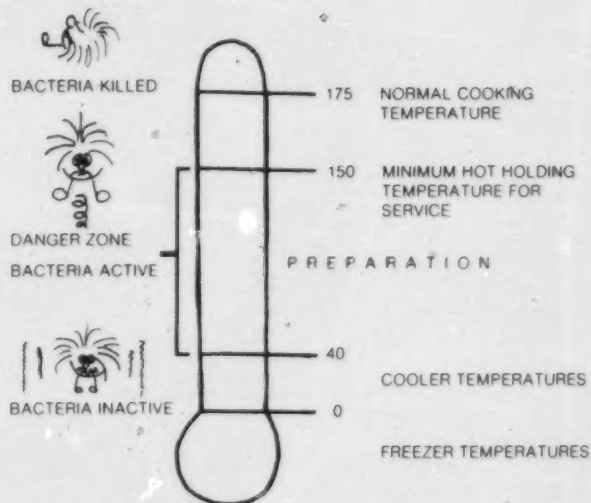


ILLUSTRATION 6

THERMOMETER RELATING
BACTERIAL GROWTH &
PREPARATION TEMPERATURES

mended hot holding temperature is 165°F. Hot holding equipment is designed to hold hot foods; not to heat foods. Therefore, food should be at least 165°F. before being transferred to this equipment. Be sure to check and record the temperature of your foods on the serving line at the main kitchens and at the satellites. If you do not have heated holding equipment, procedures will be a little different. Do not hold all foods in the service line. Bring out smaller batches and hold the rest in the ovens or kettles. Stagger production if necessary and if preparation equipment allows.

Transporting

Be cautious when transporting foods from your central kitchen (s) to other centers. Purchase transport equipment that can be washed and sanitized. Paper and wooden boxes are not acceptable. They can carry bacteria and insects in addition to your food. Contamination is a real possibility. Schedule delivery of the foods to the centers as close to service as possible. If this is not feasible, be sure your equipment will keep the food cold (below 40°F.) or hot (above 150°F.) until it is needed (HSS 55.33 (4) (f) 4). Personnel should check the temperatures of the food. If temperatures are below 150°F. or above 40°F., check the equipment to be sure it is operating properly. The delivery vehicles shall be equipped with containers or cabinets to store the meals while in transit (HSS 55.33 (4) (f) 4). The trucks or vans should be kept clean and in good condition. The protection of your food does not end when it leaves your kitchen and your sight.

Service

You have spent the bulk of your day being conscious of sanitation practices and doing everything to prevent possible contamination. Now it is time to actually serve the food to your children. Basic sanitation rules and concepts should not be forgotten. During service, food must not be allowed to become contaminated. It should be protected from dust, sneezing, coughing, insects, and foreign objects.

Keep Hot Foods Hot, Cold Foods Cold Hot foods should be maintained at temperatures of at least 150°F. Therefore, portion hot foods into bowls and onto plates and platters as close to service as possible. If feasible, warm the bowls, plates and platters prior to portioning. This helps to retain the heat of the foods for a greater length of time. Cold foods (including milk) should be refrigerated until service begins. Cold foods and milk should be maintained at 40°F. or below. Once foods begin to either cool or warm towards room temperature, they provide a more suitable environment for bacteria and bacterial growth. Thus you want to maintain food temperatures at either above 150°F. or below 40°F.

Portioning Be very careful when portioning foods into service containers. Plan on one serving per child and/or adult per item on the menu. Then, if seconds are desired, more food can be obtained from the kitchen. These seconds would be at the proper hot or cold temperatures. HSS 55.33 (4) (f) 2 states that "food returned from individual plates or from dining tables shall be discarded." The foods left over on the tables may be exposed to a multitude of sources of contamination, such as coughing and sneezing over foods and touching by hands. If you limit the amount of foods portioned into the service containers, you should reduce the amount of food you must discard to virtually nothing. Foods left over that have been maintained at the proper temperatures in the kitchen may be retained for later use.

If you transport food from the kitchen to classrooms for service, a few more suggestions need to be mentioned. Cover your food. This protects it from possible contamination and helps to maintain proper temperatures. If you portion the foods into serving containers in the classroom, remember what was mentioned above. Be careful how much food is actually placed into the bowls or onto the plates. Try to plan on one serving per child and/or adult. Food remaining in the original pan (not used on the table) should remain covered and may be refrigerated for later use. Discard the food remaining at the tables. For more information on leftovers, see section entitled "Handling of Leftovers."

Hints About Service Be sure to provide the children with the appropriate eating and service utensils. Encourage their use. Of course, if finger foods are offered - fingers are just fine! If you transfer milk from the original container to a pitcher, use a covered pitcher. This type of pitcher protects the milk from possible contamination, i.e. sneezing, coughing, food objects being dropped in, etc. Do not allow children to pour unused portions of milk back into the pitchers. This milk has been exposed to many sources of contamination and should be discarded. Food is fun to play with, but some play may be dangerous. For instance, if a child drops a portion of food on the floor and puts it back on his/her plate or the service plate, the food is no longer 'clean' and should be discarded - not eaten.

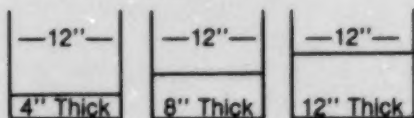
Handling of Leftovers

If you have any hot foods left after service, do not allow them to cool to room temperature. Refrigerate or freeze these leftovers immediately. HSS 55.33 (4) (f) 3 states that "leftover prepared food which has not been served shall be refrigerated promptly and used within 24 to 36 hours, or frozen immediately for later use." Pack the foods in shallow pans to promote faster cooling. Do not tightly cover the foods. This allows steam to escape and to increase the cooling rate. Once it is completely cooled, then tightly cover. If deep pans must be utilized, stir or agitate the food frequently. This prevents the food in the center from traveling through the Danger Zone slowly and promotes faster cooling.

The cooling rate is proportional to the half-thickness of the food squared.¹

$$\text{Cooling Rate} = (1/2T)^2$$

(T = Thickness)



COOLING RATE 4 Hours 16 Hours 36 Hours

ILLUSTRATION 7 COOLING RATES

It is strongly recommended that you do not try to cool food that is more than four inches thick.

TABLE II
Food Thickness & Cooling Rates

Reduce Thickness of Food By Factor Of:	Cooling Rate Reduced By A Factor Of:
2	4
3	9
4	16

If leftover food is being transported from other centers to the main production kitchen, certain decisions will have to be made. Do you keep this food? vs. Do you throw it? Consider the length of time the food has been sitting or enroute back to the central kitchen. Look at the kind of transport equipment being utilized. Check the temperatures of the returning food. Also consider the type of food in question: mixtures (i.e., casseroles, meat and gravy) vs. single items (patties, pieces of meat). If you question the safety of the food, throw it out. Do not take any chances.

Clean-up and Storage

Effective dishwashing is vitally important for both health and aesthetic reasons. It is essential that all child care food service employees know and understand why so much emphasis is placed on this phase. No one wants to eat off of dirty trays or plates, or to eat with sticky flatware. The children and adults that dine with you daily deserve clean eating utensils. More importantly, they deserve to be protected from disease-causing bacteria. Food borne outbreaks are not normally

traced to improper dishwashing practices. However, other disease organisms may be found on improperly sanitized utensils. A few of these organisms are the bacteria that cause trench mouth and the viruses that cause influenza and mumps. To protect your children's health, you must properly clean and sanitize all utensils.

Water is the main cleaning agent. Cleaning compounds and friction (provided by elbow grease and brushes) help water to do a better job. Your water may need to be conditioned in order that the detergent is able to work more effectively. The detergent loosens the soil. Friction helps to remove it. Soil must be thoroughly rinsed off. If not, it will interfere with your sanitizing agent's action.

Dishwashing is only as effective as the person doing the dishwashing. All phases of manual or mechanical dishwashing must be properly performed before we can be assured of clean utensils. In addition, they must also be properly stored to prevent contamination.

There are two basic methods of dishwashing. The first is manual dishwashing. In this method, the actual washing and sanitizing is done by hand. The second is mechanical dishwashing. A machine does the washing and sanitizing in this method. Both methods will be discussed.

Manual Dishwashing

FIRST STEP: Prepare pots, pans, and utensils for washing.

- Scrape and rinse off surface food particles (HSS 55.33 (4) (b) 2).
 - a) The recommended rinse water temperature is 110°F.
- Sort and check for any cracked and chipped items (HSS 55.33 (4) (b) 2).
 - a) Discard these unusable items.
- Flatware should be soaked in a solution of water and detergent.
 - a) The recommended temperature for this soaking solution is 135°F.
 - b) Hot water helps to soften grease and cold water helps to soften egg, rice, potato and cooked cereals.

SECOND STEP: Wash in first compartment.

- The recommended water temperature is 110°F. to 125°F. (HSS 55.33 (4) (b) 3a). Check this temperature.
- Determine the amount of detergent needed for the normal water volume of your sink and use this amount consistently.
- Change wash water frequently.

1. HEW. Institutional Sanitary Food Service. Cincinnati, Ohio. Public Health Service, 1977, p. 102.

- Scrub with clean brushes. (DO NOT use steel wool)
- Wash glassware first, then flatware, dishes, trays, and finally pots and pans.
- Wash until all visible food particles and grease have been removed.

THIRD STEP: Rinse in second compartment.

- Rinse in hot water (HSS 55.33 (4) (b) 3b).
 - a) The recommended rinse temperature is 120°F. to 140°F.
- Change this water frequently to prevent build-up of soap suds. If only two sinks are available, rinse from the faucet into wash water.

FOURTH STEP: Sanitize in third compartment.

- There are two methods you can use:

(1) Hot water method

- Immerse in hot water which is a minimum of 170°F. for at least 30 seconds.
 - a) Use a thermometer to check the water temperature.
 - b) Usually an electric immersion heater or a booster heater is utilized to maintain this high temperature.
 - c) Dishes and utensils should be racked into a container with handles for immersion since water is too hot for easy handling.

(2) Chemical method

- Submerge in a solution made with an approved sanitizer for at least two minutes (HSS 55.33 (4) (b) 3c).
 - a) If chlorine bleach is used, the water temperature should be no higher than 75°F. Other sanitizers will recommend temperatures that allow them to react most efficiently.
 - b) The solution should have a chlorine concentration of 100 parts per million. A simple rule of thumb is two tablespoons bleach per gallon of water but be sure to double check this with the instructions on your bottle. Some brands vary.
 - c) Check your sanitizing solution with test tapes or kits to ensure proper strength. These are often provided by the manufacturer of the sanitizing agent.
- Sanitizing solutions should be changed periodically to stay fresh.

- Do not add detergents, soaps, water softeners, or washing compounds to sanitizing solutions since these interfere with the sanitizer's effectiveness.

FIFTH STEP: Air dry all utensils (HSS 55.33 (4) (b) 5).

- Allow all utensils to air dry. DO NOT towel dry anything.

SIXTH STEP: Drain and clean sinks and sink area.

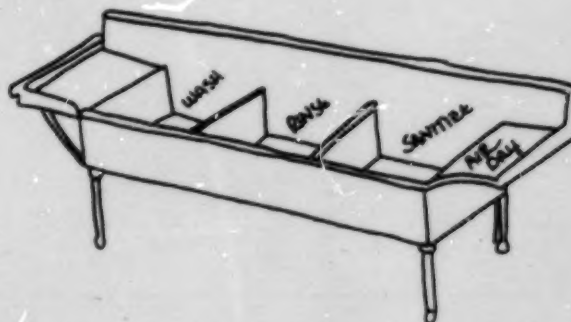


ILLUSTRATION 8
MANUAL SINK

Mechanical Dishwashing

FIRST STEP: Check machine.

- Check inside for food debris, broken glass, flatware, or other objects and remove.
- Check spray arms for clogged water jet holes.

SECOND STEP: Start machine.

- Follow manufacturer's instructions.
- Put in detergent, following manufacturer's directions.

THIRD STEP: Prepare utensils.

- Scrape dishes to remove the bulk of the surface foods.

FOURTH STEP: Prewash.

- Soak flatware in a solution of water and detergent to remove surface food debris.
- Use overhead spray to rinse off remaining food particles.

FIFTH STEP: Rack.

- When racking, be sure all surfaces of utensils are exposed to spray.
 - a) Do not overcrowd racks.
- Put flatware into cones with handles down.
 - a) DO NOT OVERCROWD.
 - b) You may wish to rack, then pre-wash or vice versa. Either way is acceptable.

SIXTH STEP: Put racks through dishmachine.

- Check wash temperature.
 - a) Range should be 130°F. - 150°F.
 - b) Utensils should be held in the washing phase for at least 20 seconds (HSS 55.33 (4) (b) 4a).
- Check rinse temperature.
 - a) Minimum temperature is 180°F.
 - b) Dishes should be held at 180°F. for at least 10 seconds (HSS 55.33 (4) (b) 4a).
- On those machines with pressure gauges, check to see that pressure is maintained at 8 to 12 pounds per square inch.
- Do not go from the dirty dish area to the clean dish area without washing or sanitizing your hands. Otherwise, cross contamination can occur.

SEVENTH STEP: Remove racks from dishmachine.

- Allow all utensils to air dry (HSS 55.33 (4) (b) 5).
- Unrack.
 - a) Do not recontaminate cleaned and sanitized utensils.

EIGHTH STEP: Clean machine inside and out.

Home Style Dishwashers

If your center has a home style dishwasher that has a temperature setting of between 130° and 150°F., the dishwashing procedures are a bit more complicated.

The steps are:

FIRST STEP: Prepare utensils.

- Scrape dishes to remove the bulk of the surface foods.
- Rinse off remaining food particles.

SECOND STEP: Rack.

- Follow manufacturer's recommendations.
- Do not overcrowd racks.

THIRD STEP: Wash and rinse.

- Follow manufacturer's instructions.
- Put in detergent, following manufacturer's recommendations.
- Turn machine on and allow it to go through cycle.

FOURTH STEP: Sanitize.

- Unrack dishes.
- Submerge cleaned dishes in an approved sanitizing solution for at least two minutes (HSS 55.33 (4) (b) 4d).

FIFTH STEP: Air dry.

- Allow all dishes, utensils, and flatware to air dry (HSS 55.33 (4) (b) 5).

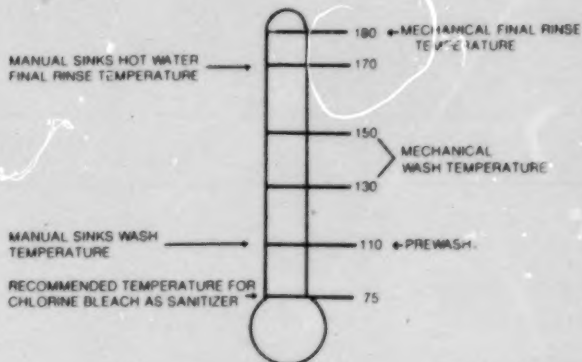


ILLUSTRATION 9
DISHWASHING TEMPERATURES

Storage of Clean Pots, Pans and Utensils

Take care to properly handle your cleaned and sanitized pots, pans, trays, dishes, flatware, and utensils. Do not recontaminate these items by touching them with dirty hands. Wash your hands thoroughly before putting the clean utensils into storage. Store the clean pots and pans on clean shelves or racks. Place them upside down on the racks or shelves so the interior surfaces are protected from dust, bacteria, and insects. You may wish to cover these items with clean cloths for added protection. Hanging pots and pans from overhead racks is not recommended. The interior surfaces are exposed to possible sources of contamination, i.e., dust, insects, bacteria. If racks are used, remember to wash and sanitize the utensils before use. Flatware should be transferred from one cone to another so that the handles are now standing up. Store flatware, trays, dishes, and utensils in their designated places.

Cleaning and Sanitizing of Equipment

Equipment should be purchased with easy cleanability in mind. Equipment with movable parts should come apart easily for thorough cleaning and sanitizing. The surface area should be made of smooth, noncorrosive, nonchip material and be free from cracks and corners that trap food particles and grease. The National Sanitation Seal of Approval on equipment assures you that it has met cleanability requirements.

Cleaning schedules that include equipment should be developed and enforced. Duties may be assigned on a daily, weekly or monthly basis and may be assigned to a specific person or to a position. Proper cleaning methods may need to be the subject of inservice training programs so that all employees know how to properly clean and sanitize all pieces. Managers should also consider developing and using checklist. These checklists can be used to ensure that all assigned tasks have been completed. (See Chapter V)

Equipment manuals should be utilized. The manufacturer's recommendations concerning specific cleaning, sanitizing, and polishing materials and instructions for dismantling and/or cleaning and sanitizing are included in the manuals. The manual is most generally a reliable source.

It is usually easier and less time consuming if you clean the equipment right after use. If this is impossible, allow the equipment to soak to loosen food and keep it from drying on.

If chlorine is used as a sanitizer, use a lukewarm (75°F.) solution. The concentration of chlorine is stronger in this solution than normally utilized in the manual dishwashing process. A chlorine concentration of 200 parts per million is recommended.

General Clean-Up

Basic housekeeping practices are also very important in preventing food-borne illnesses. Managers

should develop and enforce cleaning schedules. Floors must be swept and mopped each day after food has been put away. Mop with warm detergent water. Rinse the floor area with warm water. Both wash and rinse waters should be changed frequently.

Brooms and mops should be washed thoroughly. Mops should be washed in a warm, detergent and water solution and then rinsed thoroughly. Occasionally add bleach or a sanitizer to the rinse water. Allow brooms and mops to air dry with heads up in a well-ventilated room.

Walls, windows, and ceilings should also be kept clean and in a good state of repair. Cracks and rough surfaces are difficult to clean. Food and debris and dust can collect and encourage bacteria to grow and multiply there. Insects can also gain entrance and find cracks a suitable place to reside. Cracks should be sealed to prevent this. Peeling paint on walls and ceilings presents a multitude of problems. They can not be properly cleaned. Floor areas must be constantly swept free of paint particles. In addition, the paint particles can fall onto food containers and into foods. Thus, contamination can result. Any area that has cracked or peeling paint should be repainted. Establish a regular routine to wash walls. Some may need daily attention while others require washing on a monthly basis. Windows and doors should also be cleaned at the same time.

Exhaust hoods and filters should not be overlooked. These should also be cleaned at regular intervals. Filters should be washed on a weekly or biweekly schedule. Check with local health officials and ordinances.

Do not forget the locker rooms and toilet facilities. These areas demand cleaning and maintaining. Establish a daily cleaning schedule for these areas. Be sure that ample soap and paper products are available. This area should be well-ventilated and properly lighted.

Chapter IV

PERSONAL HYGIENE

The health and food handling practices of the child care food service employee plays a key role in the overall sanitation picture of your food service operation. Many food-borne illnesses can be traced back to the food handler. Therefore, all must be aware of and practice sound principles of personal hygiene.

New food service employees are required to have complete physical examinations within six months prior to employment, or within 30 days after beginning work (HSS 55.32 (1) (g) 1). Chest x-rays, and/or tuberculin tests are also required to guarantee that employees are free from harmful illness (HSS 55.32 (1) (g) 1a). These examinations not only protect the individual food service employee, but also protect the children and the adults being fed.

Employees who are ill should not report to work. Many human illnesses (both of the respiratory and digestive tracts) can be transmitted through food (i.e., colds, pneumonia, dysentery, and infectious hepatitis). Chapter HSS 55 states that "no staff, visitor or parent with symptoms of illness, communicable disease or whose behavior gives reasonable concern for the safety of children may be on the premises of the center" (HSS 55.32 (1) (g) 3). Each supervisor should establish guidelines for her/his kitchen.

Cleanliness

Each employee should practice personal cleanliness. Some basic principles are:

1. Bathe at least once a day.
2. Keep hair clean by shampooing as often as necessary.
3. Keep hair neat.
4. Keep nails clean, well trimmed, and free from polish.
5. Use a deodorant daily.
6. Wear hairnets (hair spray is not enough!) (HSS 55.33 (4) (g) 2b).

Men or boys should wear caps if hair is short—a net if hair is long.

7. Do not wear excessive makeup or perfume.
8. Do not wear excessive jewelry. (Jewelry is a great collector of food debris.)
9. Wear a clean uniform (or outfit) and undergarments daily (HSS 55.33 (4) (g) 2b).
10. Wear clean, comfortable, enclosed, low-heeled shoes.

Hands

Hands are an important link in the transmittal of disease. Therefore, they should be thoroughly washed often (HSS 55.33 (4) (g) 2c). They should be washed with warm water and soap before beginning to work, before touching food, and before serving. They should also be thoroughly washed after visiting the restroom, using a disposable tissue, sneezing, coughing, touching the face or hair, handling money, handling raw poultry, meat and produce, handling anything dirty, handling and scraping dirty dishes, and smoking. Handwashing facilities and disposable towels should be available in both the kitchen and the restroom.

Smoking

"Smoking shall be permitted only in rooms or areas not used by children during hours of operation." (HSS 55.33 (1) (b) 8). It is strongly recommended that smoking be not permitted in food preparation, storage, service, and clean-up areas. Smoke and ashes are both considered contaminants. They can fall into food and onto work surfaces, resulting in contamination.

Chapter V

INSECT AND RODENT CONTROL

The presence of insects and rodents in any food service operation presents both a health hazard and the strong potential for an economic loss. Therefore, prevention is the key. There are two basic goals in any prevention program: 1) to protect those you serve; and 2) to prevent the loss of foods and thus, dollars. Insects and rodents should not be allowed to enter your premises. If entry has already been gained, then you must make their "stay" unbearable.

Diseases

Many diseases are carried by both insects and rodents. For instance, cockroaches have transmitted dysentery and typhoid fever. Fleas which infest rats can cause plague. These pests can spread bacteria and disease by: 1) simple physical contact with food; 2) by many insects' eating process through regurgitation; and 3) by their droppings of waste products. The presence of insects and rodents can endanger the health and well-being of those you serve. Thus, for their safety you must be concerned and maintain strict codes of cleanliness.

Economic Loss

The loss of foods due to insect or rodent infestation costs the food industry hundreds of thousands of dollars each year. Thus, the simple presence of these pests presents you with the potential for a large economic loss. For instance, a rat can consume tremendous amounts of foods for an animal of its size. But the losses due to the contamination of foods and to the damages to the physical surroundings are even more costly. Rats have been known to gnaw through lead pipes to reach water! During the process of building their nests, rats and mice can cause much physical damage. Therefore, to prevent this economic loss, again you must prevent their entry or to make their stay, if entrance has been gained, unbearable.

Prevention

If by this point it has not become obvious, pest prevention and control is a vital and integral part of your sanitation program. HSS 55.33 (1) (d) 3 states that "premises shall be maintained so as to prevent the entrance or harborage of vermin". To prevent the entrance of insects such as flies and cockroaches:

- seal cracks and crevices, such as where wall meets floor;
- screen all windows and doors;
- maintain the screens in good order;
- prevent your garbage storage area from becoming a breeding ground;

- dispose of trash and garbage daily;
- use trash containers with tight-fitting lids and that can easily be washed;
- clean trash containers;
- do not allow doors to stand open for any length of time;
- inspect deliveries for signs of unwanted visitors;
- keep storerooms dry, well-lighted and ventilated;
- clean up spills immediately;
- clean shelving and drawers frequently; and
- maintain the outside of the building, too.

To prevent the entrance of rodents:

- seal cracks, crevices, and openings around exposed pipes (any potential entrance);
- screen all openings;
- eliminate sources of food and water;
- inspect deliveries for signs of rodents;
- do not store many cardboard cartons in any given area (this is a perfect nesting site);
- store foods off the floor on pallets or dollies, in tightly-sealed containers, and away from walls;
- keep storage areas clean and well-lighted;
- store garbage containers on pipe racks or concrete platforms at least 12 inches off the ground; and
- tightly cover garbage containers and regularly clean the containers.

Inspect your facility frequently for signs of infestation. Cockroaches are night insects, so their detection may be difficult. One sign is their leavings. They are similar to those of mice, but have ridges running lengthwise and have a characteristic, musty odor. Mice also indicate their presence by their droppings (about $\frac{1}{4}$ inch in size). Other signs are a characteristic odor, gnawings on wood, and gnawings on food containers. Rat droppings are larger— $\frac{1}{2}$ to $\frac{3}{4}$ inch. Rats use certain paths and leave an oily residue on the walls. This usually looks like a smudged trail. Gnawings are another indication of their presence. Inspections should become a regular part of your routine.

Extermination

Professional exterminators may be needed to assist you in the removal of these pests. The exterminators can help you rid your premises of current residents. But more importantly, measures to prevent their re-entry

must be employed. Otherwise, your problems will just repeat themselves.

Chemical pesticides and poisons should be used only after you have checked with your local health department. Many of these agents are also harmful to humans and their use around foods could be a potentially dangerous one. Many are so dangerous that their administration by only professionals is advised. Check with your health department before beginning your own pest eradication program.

Prevention is the key word. Do everything within your power to prevent these pests from entering your food service. Good housekeeping is a must. No amount of insecticides and no extermination program can overcome the effects of poor daily housekeeping. An ounce of prevention is worth pounds of cure!



ILLUSTRATION 10

**INSECTS & RODENTS DO NOT
BELONG IN THE KITCHEN**

Chapter VI

SAFETY AND SANITATION CHECKLISTS

Checklists are effective management tools. They can help you determine what areas of safety and sanitation need attention. The frequency of the inspection is optional. If you utilize work schedules for equipment clean-up and maintenance, a daily inspection of the areas is recommended. A complete inspection might be conducted once a month. You might wish to develop your own checklist. Or you may wish to adapt one or both of the checklists included in this manual in the ap-

pendix. The first, Daily Checklist, is one that could be used in the daily inspection of equipment and work areas. The second checklist, Safety and Sanitation Inspection Sheet, could be used for a complete check. This checklist combines both areas of sanitation and safety. Utilize the information discovered on these checklists. Correct any deficiencies to improve your kitchen and its operation.

Chapter VII

INSERVICE TRAINING

HSS 55.32 (2) (c) states that "the center shall provide food service personnel with orientation and inservice training in kitchen sanitation, food handling, and nutrition." Plan to hold your inservice training programs on a regular basis. Do not try to cover too broad an area in a short period of time. For instance, sanitation cannot be properly discussed in only one or two hours. A more specific area, such as food-borne illnesses or personal hygiene could easily be handled within these time constraints. Be sure to notify your employees of the time and location of the inservice well in advance. This allows them to plan their work load around the inservice and to prevent them from scheduling any other meeting or important appointments. Inservices should become part of the routine rather than a rare, occasional gathering.

Sanitation is a vitally important area for your inservices. There can be a regular turnover of food service workers within a kitchen. When employees are hired, sanitation training must be an integral part of their "learning the ropes." The principles of large quantity cooking are different from those practiced at home. The difference lies in the responsibility for the health of only a few versus the health of many. Even if your turnover is virtually zero, everyone needs reminding. So many seemingly minor practices can be forgotten. Everyone should be familiar with sound sanitation principles involved throughout the kitchen. This is especially true if a rotational system of jobs is utilized. Then all workers know all jobs. It also is vital when vacancies occur due to illnesses or vacations and others must fill in for the missing person (s).

Allow yourself an adequate amount of planning time. Decide upon the area you want to discuss. For instance, you might wish to use one of the checklists included in the appendix to evaluate your kitchen (s). Any deficiencies noted might alert you to an area that deserves formal discussion at an inservice. Also included in the appendix are topic outlines that you may wish to use as a basis for your training. Films or slides are valuable learning tools. There are a multitude of good audio-visual materials available from many sources. A list of libraries and agencies loaning or selling these is included in the appendix. Write for their catalogs. When ordering audio-visuals, request at least two (in case one is not in circulation). Preview the film before showing it. You may decide not to use it if it does not meet your needs. The film may say something you disagree with or may be in disagreement with HSS 55. This would be an excellent area for discussion.

Overheads are also very useful. They draw your group's attention to specific points. They assist you in organizing your presentation. A variety of prototypes for overheads are also included in the appendix. Guest speakers may be available. Your local health department might be able to send one of their sanitarians to speak at your inservice. You might wish to share this book with your speaker. Be very specific when requesting guest speakers. Be sure to tell them the areas you want discussed and how much time they can have.

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- U.S. Department of Agriculture, "Principles and Practices of Sanitation and Safety in Child Nutrition Programs." Preliminary Report. Food and Nutrition Service, U.S. Department of Agriculture, Washington, D.C., 1977.

APPENDIX

Sources For Audio-Visuals

- * Food and Nutrition Information and Educational Materials Center
National Agriculture Library
Room 304
Beltsville, Maryland 20705
(301) 344-3719

Bureau of Audiovisual Instruction
University of Wisconsin—Extension
1327 University Avenue
Madison, Wisconsin 53706
(608) 262-1644
- * U.S. Department of Health, Education and Welfare
Public Health Service
Food and Drug Administration
Executive Director of Regional Operations
Division of Federal/State Relations
State Training Branch
550 Main Street, FOB, Room 8002
Cincinnati, Ohio 45202
(request Visual Training Aids on Food Service & Processing)
- * Instructional Media Division
Public Health Service
Center for Disease Control
Atlanta, Georgia 30333
(request Visual Aids in Food Hygiene for Training Food Service Personnel)
- * Single Service Institute
250 Park Avenue
New York, New York 10017
- * Institutional Division
The Diversey Corporation
1855 South Mt. Prospect Road
Des Plaines, Illinois 60018
- Continental Film Productions Corp.
P.O. Box 5126
Chattanooga, Tennessee 37406
(615) 622-1193
- National Educational Media, Inc.
15760 Ventura Boulevard
Encino, California 91435
(213) 990-2125
- CBI Publishing Company, Inc.
51 Sleeper Street
Boston, Massachusetts 02210
(617) 426-2224
- Comprenetics, Inc.
340 N. Camden Drive
Beverly Hills, California 90210
(213) 273-5400
- Educational Materials Center
National Restaurant Association
Suite 2600
One IBM Plaza
Chicago, Illinois 60610
- Cine-Tele Productions
6325 Santa Monica Boulevard
Los Angeles, California 90038
- National Audio-Visual Center
General Services Administration
Washington, D.C. 20409
- National Sanitation Foundation
National Sanitation Foundation Building
Ann Arbor, Michigan 48105
- ROCOM
Division of Hoffman - La Roche, Inc.
Nutley, New Jersey 07110

*These sources loan audio-visuals at no charge.

Storage of Food*

Product	-Cool Storeroom-	-Refrigerator-	Signs of Deterioration
Recommended Time Limits			
Baking Supplies			
Baking Powder	8-12 months		Caking
Chocolate -			
Baking	6-12 months	2 years	Mold, mustiness, loss of flavor
Sweetened	2 years (not over 65°F.)		Mold, sugar bloom on surface, stale flavor
Chocolate Milk	6-12 months	1 year	Same as above
Cornstarch	2-3 years	3-5 years	Caking, foreign, musty odors
Tapioca	1 year	2 years	
Yeast, dry	18 months	3 years	
Baking Soda	8-12 months		Caking
Canned Goods			
Fruits (in general)	1 year	4 years	Softening, fading color, loss of flavor, can bulge, leakage, pin holing
Fruits, acid types	6-12 months	3 years	Same as above but particularly pin holing
Fruit Juices	6-9 months	3 years	
Meat, Poultry,			
Seafood (in general)	1 year	2-4 years	Same as above
Soups (dry mixes and bouillon)	1 year	3-4 years	
Vegetables (except high acid)	1 year	4 years	Softening, fading color, loss of flavor, can bulge, leakage, pin holing
Vegetables, high acid	7-12 months	2-3 years	Same as above but particularly pin holing
Condiments & Seasonings			
Mustard, prepared	2-6 months	1 year	Gas bubbles, brown surface color, sulfur-like odor
Flavoring extracts	Indefinite	Never refrigerate	
Salt	Indefinite		
Sauces	2 years	2-3 years	Separation of ingredients, off-odors, color change
Spices, Herbs, Whole Seeds	2 years to indefinite		Fading color in herbs, loss of aroma
Spices, Herbs, Seeds, Ground (except Paprika)	1 year	2 years	Loss of aroma, faded colors, caking
Paprika, Chili Powder, Cayenne, Red Pepper	1 year	1 year	Fading color, infestation

Product	-Cool Storeroom-	-Refrigerator-	Signs of Deterioration
Recommended Time Limits			
Seasoning Salts	1 year	2 years	Caking
Vinegar	2 years	3 years	Presence of "mother", evaporation, infestation
Dairy Foods & Cheese			
Cheese, hard types		1 mo. (32°F.) 2 wks. (45°F.)	Drying out, moldiness, "oils off"
Cheese, soft types		1-2 weeks	Drying out, moldiness, "oils off"
Milk, dry, nonfat	1 year	2 years	Flavor changes, lumping, darkening
Milk, dry, whole	10-12 months	2 years	Darkening, stale flavor, rancidity
Milk, condensed	1 year (if av. temperature no more than 60°F., 2 mos. at 70°F.)	1 year	Darkening, thickening, change in flavor, swelled cans
Milk, evaporated	1 year (if av. temperature no more than 60°F., 2 mos. at 70°F.)	1 year	Darkening, separation of cream layer, gelling
Fats and Oils			
Butter		1 mo. (35-45°F.); 6-9 mos. (0°F.)	Absorption of foreign odors, rancidity
Margarine		1 mo. (35-45°F.) 3 mos. (0°F.)	Stale flavors, rancidity, surface darkening, mold, absorption of foreign odors, oil separation
Salad Dressings	2 months (max. at 60°F.; optimal is 50°F.)	2 months	Rancidity, off-color, separation of oil from water
Salad Oil	6-9 months		Rancidity (odor similar to old lard or grease)
Shortenings, vegetable	2-4 months	1 year	Rancidity, absorption of foreign odors
Grains			
Cereal Grains (for cooked cereal)	8 months		Mold, webbing, infestation, musty stale odor
Cereal (ready to eat)	6 months		Loss of crispness and development of a toughness, mold, webbing, infestation, rancidity
Cornmeal	8-12 months		Rancidity, mold, infestation, caking
Flour, bleached	9-12 months	2 years	Infestation, caking, mustiness
Flour, whole grain	2-4 months	4-6 months	Rancidity, infestation, caking, mustiness
Pastas	3 months		Mold, infestation, checking, mustiness
Prepared Mixes	6 months	12 months	Infestation, stale odor, discoloration, loss of baking performance
Rice, parboiled	9-12 months		Infestation, color change (to yellowish), rancid odor
Rice, brown or wild		6-9 months	Rancid odor, infestation

Product	-Cool Storeroom-	-Refrigerator-	Signs of Deterioration
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Recommended Time Limits

Sweeteners

Sugar, granulated	Indefinite		
Sugar, confectioners	Indefinite		
Sugar, brown		1 year	
Syrups, corn, sugar, honey, molasses	1 year		Mold

Miscellaneous

Beans, dried	1-2 years	2-3 years	Mold, musty appearance
Crackers-Cookies	1-6 months	4-12 months	Staling, rancidity, softening, infestation
Dried Fruits	6-8 months		Sogginess or hardness, crystalliza- tion, infestation
Dried Prunes		15 months	Infestation, sweating, fermenting, molding, excessive dry out and sugaring
Gelatine	2-3 years	3-4 years	Caking
Dates, pasteurized	8-12 months	8-12 months	
Jams, Jellies	1 year	2-3 years	Color change, crystallization, carmelization
Nuts	1 year		Mold, infestation, rancidity
Pickles, Relishes	1 year	3 years	Pickles soften, develop hollow cen- ters, brine cloudy
Potato Chips	1 month		Staleness, rancidity
Coconut, sweetened	4-6 months		Browning, mold, off-flavor, sogginess
Dehydrated Vegetables	7-12 months	4 years	
Eggs, powdered	4 months	1 year	Caking, off-odors, mold

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Storage Chart*

Food	-Refrigerator-	-Freezer-	Evidence of Quality Loss
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Approximate Time Limit for Storage

Sandwiches

Meat, poultry, fish and egg salad	2 days	6 months	Off-flavor
Other	5-6 days	6 months	Moldy

Soups, Gravy & Stuffing

Gravy	3-4 days	1 year	
Soups			
- leftover	3-4 days	1 year	
- canned, opened	3-4 days	1 year	
- frozen	7 days	1 year	
Stuffing	3-4 days	1 year	

Fish

Fresh	1-2 days	1 year	
Cooked	3-4 days	1 year	
Bisques, chowders, stews & soup	1-2 days	1 year	
Canned, opened	3-4 days	1 year	
Frozen	3 days	1 year	

Eggs & Egg Dishes

Fresh			
- in shell	10 days		Off-odors
- separated yolks	1-2 days	1 year	Runny, shape lost
- separated whites	1-2 days	1 year	Whites become water
Cooked			
- in shell	10 days		
- shelled	10 days		
Prepared dishes (egg salads, stuffed, fondue, etc.)	3-4 days	3-4 months	
Frozen yolks or whites	3-4 days	1 year	Mold
Pickled	3 months		Mold
Dried (powdered)	1 year	1 year	Mold

Cheese and Cheese Dishes

Cheese, hard	3-9 months	1-2 years	Off-flavor
Cheese, soft	1-2 weeks	1 year	
Cheese & cheese spreads in cans or jars			
- unopened	kitchen shelf		Off-flavor
- opened	2-3 weeks		Off flavor
Prepared dishes, fondue, rarebit	2-3 days	1 year	

Food	-Refrigerator-	-Freezer-	Evidence of Quality Loss
Approximate Time Limit for Storage			
Poultry and Stuffing			
Fresh			
- whole	6-8 days	6 months	Moldy, tainted off-odor
- cut up	4-5 days	6 months	Moldy, tainted off-odor
Leftover, cooked	4-5 days	6 months	
Poultry pies, stews, a la king, etc.	1-2 days	6 months	
Canned			
- unopened	kitchen shelf	6 months	
- opened	4-5 days		
Frozen	10 days	6 months	Moldy, tainted off-odor
Smoked	10-20 days	6 months	Moldy, tainted off-odor
Meat			
(beef, lamb, pork, veal)			
Raw roasts, steaks, chops, and stew meat	6-8 days	6-12 months	Darkening, drying out
Raw boned and rolled roasts	4-5 days	6-12 months	Darkening, drying out
Raw liver and organ meats	3-4 days	6-12 months	Darkening, drying out
Raw ground meats	1-2 days	6-12 months	Graying, drying out
Smoked, corned, salt-cured, pickled, and dried	10-20 days	1 year	Excessive drying
Cold cuts	7 days	6-12 months	Darkening, drying out
Leftover broiled, fried or roasted meat	5-6 days	6-12 months	Darkening, drying out
Leftover casseroles, meat pies and stews	3-4 days	6-12 months	
Canned			
- unopened	kitchen shelf	6-12 months	
- opened	4-5 days		
Frozen	10 days	6-12 months	Darkening, drying out
Fruits and Vegetables			
Fresh			
- soft-textured fruits and vegetables, i.e., berries, tomatoes	3-14 days	1 year	Softening, discoloration, mold, gen- eral decay
- leafy vegetables	3-8 days	1 year	Decay
- firm or hard fruits and vegetables, i.e., apples, carrots	1-4 months	1 year	Softening

Food	-Refrigerator-	-Freezer-	Evidence of Quality Loss
Approximate Time Limit for Storage			
- cooked fruits and vegetables (including creamed vegetables)	4-5 days	1 year	Curdled, mold, off-odor, off-flavor
Canned			
- unopened	kitchen shelf		Moldy, curdled, off-odor, off flavor
- opened	4-5 days	1 year	Same as above
Frozen	7 days	1 year	Mold, off-flavor
Dried	not advisable because of moisture absorption		Mold, off-flavor
Pickled			
- fruits	2-3 weeks	1 year	Darkening, softening, mold
- vegetables	5-6 months		Mold
Spaghetti, Macaroni, Noodles & Rice			
Dry	kitchen shelf		Off-odor, off-flavor
Prepared dishes, plain or with meat, fish, chicken etc., added	4-5 days	1 year	
Salads, Dressings & Sauces			
Salads			
- vegetable & fruit (raw, canned, cooked, or frozen)	4-6 hours		
- cooked meat, poultry, fish, & eggs	3-4 hours		
Leftover salads	(see Chart for particular ingredient in question)		
Thickened salad dressings	1 wk.-1 yr.		Off-flavor
Oil & vinegar dressings	1 wk.-1 yr.		Off-flavor
White sauces & those sauces having a white sauce base	2-3 days	1 year (may separate)	Mold, off-flavor
Sweet or sour cream sauces and their variations	2-3 days	1 year	Mold, off-flavor
Hard sauce or special flavor sauces (i.e. chocolate, butterscotch)	1-6 months		Mold, off-flavor
Fats & Oils			
Butter & margarine	7-30 days	6-8 months	Off-odors, off-flavor
Lard	15-60 days	10-12 months	Off-odors, off-flavor
Firm vegetable shortenings	no definite limits		Off-odors, off-flavor

Food	-Refrigerator-	-Freezer-	Evidence of Quality Loss
Approximate Time Limit for Storage			
Fat drippings	7-30 days	6-8 months	Off-odors, off-flavor
Cooking & salad oils	no definite limits		Off-odors, off-flavor
Breads, Biscuits, Muffins, & Rolls			
Breads, biscuits, muffins, and rolls with or without fruit and/or nuts	2 weeks	5-6 months	Moldy, yeasty
Rolls w/special fillings	(see Chart information for particular type of filling)		Mold, yeasty odor, stale flavor, drying out
Prepared mixes			
- dry	5-6 months		Stale or rancid off-odor and off-flavors
- with added liquid		3-4 days	Moldy, curled, sour or yeasty odor
"Ready-for-the oven" rolls (baked but not browned)	2 weeks	5-6 months	Mold, yeasty odor
Refrigerator doughs or unbaked doughs	5 days	5-6 months	Mold, soured
Cereals, Flour, Pancake, & Waffle Mixes			
Dry	5-6 months		Stale or rancid odor
Uncooked batter or cooked leftovers	3-4 days		Moldy, curdled, soured
Baking Chocolate & Cocoa			
Bar chocolate, dry cocoa, or prepared dry cocoa mix	1 year		Off-flavor
Chocolate beverage prepared w/milk or water	7 days		Curdled, off-flavor
Cakes, Cookies, Crackers			
Cakes & cookies containing no fruit, w/or w/out icing		6 months	Mold
Cakes & cookies w/ fruit and/or nuts	3 wks.-6 mos.	1 year	Stale, mold
Cakes & cookies w/ custard topping or filling	2 days		
Refrigerator desserts containing cake or cookies & whipped cream	5-6 days	6 months	Mold
Canned cakes, such as fruit cake			
- unopened	kitchen shelf		Mold on inside of container, sour odor
- opened	3 wks.-6 mos.	1 year	Mold, sour odor, cobwebs

Food	-Refrigerator-	-Freezer-	Evidence of Quality Loss
Approximate Time Limit for Storage			
Prepared mixes			
- dry	5-6 months		Off-odor, off-flavor
- batter	3-4 days		
Raw cookie doughs	3 weeks	6 months	Mold, sour in odor
Pies & Puddings			
Soft custard & corn-starch pies & puddings, w/or w/out fruit	2-3 days	6-8 months	
Baked custard pies & pudding w/or w/out fruit	2-7 days	6-8 months	Mold, sour in odor
Gelatin & tapioca pies & puddings, w/or w/out fruit	3-7 days	6-8 months	Mold, souring
Fruit pies & puddings	3-7 days	6-8 months	Mold, sour odor
Other baked puddings (i.e. bread & rice puddings)	4-7 days	6-8 months	Mold, sour odor
Unbaked pie doughs	7-10 days	6-8 months	Mold, rancidity
Baked pie shells	3-7 days		Mold, rancidity
Ice Cream & Other Frozen Desserts			
Ice cream			
- insulated bag	5-6 hours		
- not in insulated bag	3-4 hours	8 months	
Ices, mousse, sherberts			
- insulated bag	3-4 hours		
- not in insulated bag	1 hour	8 months	
Frozen combinations with cake, cookies, or pastry			
- insulated bag	3-4 hours	4 months	Stale flavor, sogginess in baked portion, sourness in whipped garnish
- not in insulated bag	1-2 hours	4 months	Same as above
Jams, Jellies, Marmalades & Preserves			
- unopened container	kitchen shelf		Mold, fermentation
- opened container	to 5 weeks	1 year	Mold, fermentation
Fruits & Vegetable Juices			
Freshly prepared	5-6 days	1 year	Mold, off-odor, off-flavor
Canned			
- unopened	cool place		
- opened	5-6 days	1 year	
Frozen			
- unopened	7 days	1 year	
- opened	5-6 days	1 year	

Food	-Refrigerator-	-Freezer-	Evidence of Quality Loss
Approximate Time Limit for Storage			

Milk, Milk Drinks & Cream

Cream, flavored milk drinks & plain milk (whole or skimmed)	3-4 days		Curdling, mold, sour odor
Sour, cultured, or buttermilk	10-14 days		Curdling, mold, sour odor
Condensed & evaporated			
- unopened	kitchen shelf		Bulged can
- opened	10 days		Mold, curdling, sour odor

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Approximate Storage Life of Various Foods at 0°F.*

Food Item	No. of Months at 0°F
Fruits:	
Apricots	12
Peaches	12
Raspberries	12
Strawberries	12
Vegetables:	
Asparagus	8-12
Beans, snap	8-12
Beans, lima	12
Broccoli	12
Brussels sprouts	8-12
Cauliflower	12
Corn on the cob	8-12
Corn, cut	12
Carrots	12
Mushrooms	8-12
Peas	12
Spinach	12
Squash	12
Meat:	
Beef	
Ground	8
Cubed pieces	10-12
Pork	
Ground, sausage	4
Pork or ham, smoked	5-7
Bacon	3
Variety meats	up to 4
Poultry	6-12
Fish	
Lean (haddock, cod, ocean perch, etc.)	6
Fatty (mackerel, salmon, etc.)	3
Precooked Foods:	
Bread	
Quick	2-4
Yeast	6-12
Rolls	2-4
Cake	4-6
Cookies	4-6
Potatoes, french fried	4-8
Soups	4-6
Sandwiches	2

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Examples of Subject Outlines For Inservice Training

- Food-Borne Diseases
- Storage Facilities
- Preparation
- Mechanical Dishwashing
- Manual Sinks
- Personal Hygiene

FOOD-BORNE DISEASES

I. Difference between infection and poisoning

II. Food-borne illnesses

A. Botulism

1. Frequency
2. Cause
3. Common foods
4. Symptoms
5. Preventative measures

B. Staphylococcal food poisoning

1. Frequency
2. Cause
3. Common foods
4. Symptoms
5. Preventative measures

C. Perfringens

1. Frequency
2. Cause
3. Common foods
4. Symptoms
5. Preventative measures

D. Salmonella

1. Frequency
2. Cause
3. Common foods
4. Symptoms
5. Preventative measures

III. Relationship of temperatures and bacterial growth

A. 165° - 212°F.

1. Cook food here
2. Bacteria are destroyed

B. 150° - 165°F.

1. Holding food for service
2. Bacteria will not multiply

C. 40° - 150°F.

1. Danger Zone
2. Bacteria multiply readily
3. Keep food out of this range

D. 0° - 40°F.

1. Chilling food
2. Some bacteria may multiply slowly

E. Below 0°F.

1. Freezing food
2. Bacteria do survive but do not multiply

STORAGE FACILITIES

I. Introduction

- A. Relationship of sanitation to these areas

II. Dry Storage

- A. Temperature
 - 1. Thermometer
- B. Ventilation
- C. General conditions
 - 1. Clean
 - 2. Foods stacked on pallets
 - 3. Foods stored away from walls
 - 4. Location of chemicals
 - 5. First-in, first-out consumption
 - 6. Evidence of infestation

III. Refrigerators

- A. Temperature
- B. General conditions
 - 1. Clean
 - 2. Shelving solid or open
 - 3. Stacking
 - 4. Dating for first-in, first out

IV. Freezers

- A. Temperature
- B. General conditions
 - 1. Clean
 - 2. Neatly and logically organized
 - 3. Food dated

PREPARATION

I. Introduction

II. Pre-preparation

- A. Check all raw, packaged, and canned goods before they are used
 - 1. Suspicious foods
 - a. Cans with swells, dents along side seams, off-odors, etc.
 - b. Meats with slimy surfaces or off-odors
- B. Clean hands
 - 1. When changing from one job to another
- C. Plastic gloves
 - 1. Use when handling food extensively
 - 2. Do not reuse or wash
- D. Clean foods to remove soil
- E. Clean and sanitize work surfaces before and after use
- F. Correct thawing techniques
 - 1. In cooler
 - 2. Under cold, running water

III. Actual Preparation

- A. Prepare perishable foods as close to serving time as possible
- B. Heat foods to at least 170°F. (internal temperature of food mass)
- C. Keep hot foods hot (at or above 150°F.)
- D. Keep cold foods cold (at or below 40°F.)
- E. Rapid cool hot foods
 - 1. Refrigerate immediately after cooking
 - 2. Use shallow pans
 - a. Reasoning behind

IV. Relate to bacterial growth

MECHANICAL DISHWASHING

I. Introduction

II. Procedure

- A. Stations established
 - 1. Soiled/clean sides
 - a. No cross-overs unless hands washed
- B. Pre-wash
 - 1. Check for chipped or cracked dishes or trays
 - 2. Scrape
 - 3. Rinse
 - 4. Soak flatware
- C. Stack racks
 - 1. Do not overcrowd
- D. Operate machine
 - 1. Wash temperature maintained at 130°-150°F. for at least 20 seconds
 - 2. Sanitize at 180°F. (minimum temperature) for at least 10 seconds
 - 3. Temperature guages readily visible
 - 4. Pressure guage visable - 8 to 12 pounds per square inch
- E. Air dry all utensils
- F. Stack and put utensils in proper place
 - 1. Check for chipped or cracked trays or dishes

III. Clean-up

- A. Rinse out inside of machine
- B. Check upper and lower spray arms
- C. If heavily limed, use a de-liming product

IV. Machine manual

- A. Follow for correct amounts of detergent
- B. Follow for explanation of operation

MANUAL SINKS

I. Introduction

II. Procedures

A. Pre-wash

1. Scrape
2. Sort (discard cracked, chipped or unusable items)
3. Spray rinse
4. Soak if necessary

B. Wash in first compartment

1. 110°F. temperature
2. Change frequently
3. Add proper quantity and type of detergent
4. Wash in this order: glassware, flatware, dishes, trays, pots and pans

C. Rinse in second compartment

1. Clean, hot water
2. Change water frequently

D. Sanitize in third compartment

1. Submerge for 30 seconds in clean water maintained at 170°F. minimum
 - a. Must be equipped with thermometer
2. Submerge for at least two minutes in hypochlorite solution with chlorine concentration of 100 parts per million
 - a. Water should be lukewarm

E. Air dry all utensils

PERSONAL HYGIENE

I. Introduction

- A. Impress upon them that they, as food handlers, are of great sanitary importance
 - 1. Many food-borne illnesses can be traced back to the handler
 - 2. Food must be protected from time it enters facilities to time it is served

II. Basic principles

- A. Physicals
 - 1. Recommended on a yearly basis
 - 2. TB tests or chest X-ray
- B. When ill
 - 1. Stay home
 - a. First few days most infectious
 - b. Prevention the rule
- C. Cleanliness and grooming
 - 1. Bathe or shower daily
 - 2. Use a deodorant
 - 3. Clean clothes
 - 4. Clean, low-heeled shoes
 - 5. Shampoo hair at least once per week
 - 6. Fingernails
 - a. Well-trimmed, clean
 - b. No polish
 - 7. Avoid excessive perfume and make-up
 - 8. Hair nets
 - a. Hair spray and wigs are not acceptable substitutes
 - 9. Jewelry
 - a. Don't wear any except wedding band
 - b. Protects food, jewelry and worker
- D. Work habits
 - 1. No smoking
 - 2. Wash hands frequently
 - 3. Should not sneeze or cough around food
 - 4. Do not taste from fingers
 - 5. Avoid touching parts of eating utensils or china that will be touched by students' mouths

Prototypes for Overheads

T H E B I G N I N E

**MENU PLANNING AND BUYING
PRACTICES**

FOOD STORAGE

FOOD PREPARATION

TRANSPORTING

SERVICE

**UTENSIL CLEANING, HANDLING, AND
STORAGE**

EQUIPMENT CLEANING

PERSONAL HYGIENE

CLEAN HABITS SAFE FOOD

T H I N K C L E A N

A C T C L E A N

B E C L E A N

FOOD-BORNE OUTBREAKS CAUSED BY:

- * FAILURE TO PROPERLY REFRIGERATE POTENTIALLY DANGEROUS FOODS**
- * ALLOWING FOODS TO REMAIN AT WARM TEMPERATURES (WITHIN THE DANGER ZONE) THAT ALLOW FOR BACTERIAL GROWTH**
- * FAILURE TO ADEQUATELY COOK OR HEAT FOODS**
- * FAILURE TO PROPERLY CLEAN AND SANITIZE EQUIPMENT**
- * FAILURE TO PROPERLY WASH HANDS AFTER HANDLING RAW FOODS, VISITING RESTROOM**
- * ALLOWING INFECTED WORKERS WHO PRACTICE POOR PERSONAL HYGIENE TO WORK**
- * FAILURE TO PROPERLY STORE FOODS**

OVERVIEW OF FOOD-BORNE ILLNESS

NAME	FOODS USUALLY INVOLVED	ONSET & SYMPTOMS	PREVENTATIVE PROCEDURES
Perfringens	High protein foods, meats, gravies, & sauces	8-22 hours — abdominal pain, fever, diarrhea	Prompt refrigeration, thorough cooking
Botulism	Home-processed protein foods, low acid foods	12-48 hours — loss of muscular control, paralysis of CNS	Pressure cooking, thorough cooking of foods
Staphylococcus	Meat dishes (ham, poultry, meat salads) custards, cream-based dishes	2-6 hours — nausea, diarrhea, cramps, vomiting, headaches	Thorough cooking, prompt refrigeration
Salmonella	High protein (eggs, poultry, gravies) cream fillings, stuffings	6-48 hours — nausea, diarrhea, abdominal pains, vomiting	Thorough cooking, prompt refrigeration, sanitary work surfaces

TESTS FOR FOOD SPOILAGE OR POOR QUALITY

Canned Food

1. Swelled top and bottom
2. Dents along side seam
3. Off-odor
4. Foam
5. Milkiness of juice

Meat

1. Off-odor, sourness, taint
2. Slimy to touch
3. Beef soft, dark, coarse-grained; fat, soft, yellow

Leftover Food

1. Discoloration
2. Off-color
3. Mold

Fruits and Vegetables

1. White or grayish powder around stems of fruit and at juncture of leaves and stems of cabbage, cauliflower, celery, and lettuce
2. Poorly developed leaves, dry or yellow, soft, loose, coarse, sprouted, slime, mold, insect infested, unclean
3. Fruits soft, blemishes, molded, decayed, worms; citrus fruits soft, light. The powder indicates spray residues.

Dressed Poultry

1. Stickiness or rancidity under wing, at the point where legs and body join, and on upper surface of the tail
2. Darkening of wing tips

Cereal

1. Insects in cereal
2. Lumps, mustiness, mildew

Smoked Meats

1. Pale color, soft, moist, flabby
2. Sausage, bologna, frankfurters slimy, moldy, discolored spots, internal greening

Butter

1. Off-flavor, fishy, stale, unclean, rancid or cheesy flavor

PREVENT FOOD-BORNE ILLNESS

PREVENT CONTAMINATION BY:

A. Personal hygiene

1. Work with clean hands
2. Wash hands frequently
3. Use the proper utensils for handling foods
4. Wear and use plastic gloves properly
5. Cover cuts and sores with waterproof dressing
6. Keep hands away from mouth, nose, hair, & skin infections

B. Cleaning kitchen equipment

1. Use proper methods
2. Develop cleaning schedule for each piece of equipment

C. Use separate containers, equipment, and facilities for raw and cooked foods

D. Purchase foods from inspected sources

INHIBIT GROWTH:

A. Rapidly cool prepared foods in small quantities

B. Hold foods at or below 40°F. and at or above 150°F.

C. Restrict an essential element necessary for bacteria for growth

KILL THE ORGANISM:

A. Thoroughly cook the food

B. Reheat all leftovers to an internal temperature of at least 165°F.

INHIBIT GROWTH

GROWTH FACTOR

CONTROL GROWTH

FOOD

- Remove food source

MOISTURE

- Drying foods or adding high levels of salt or sugar to foods

SUITABLE
TEMPERATURE

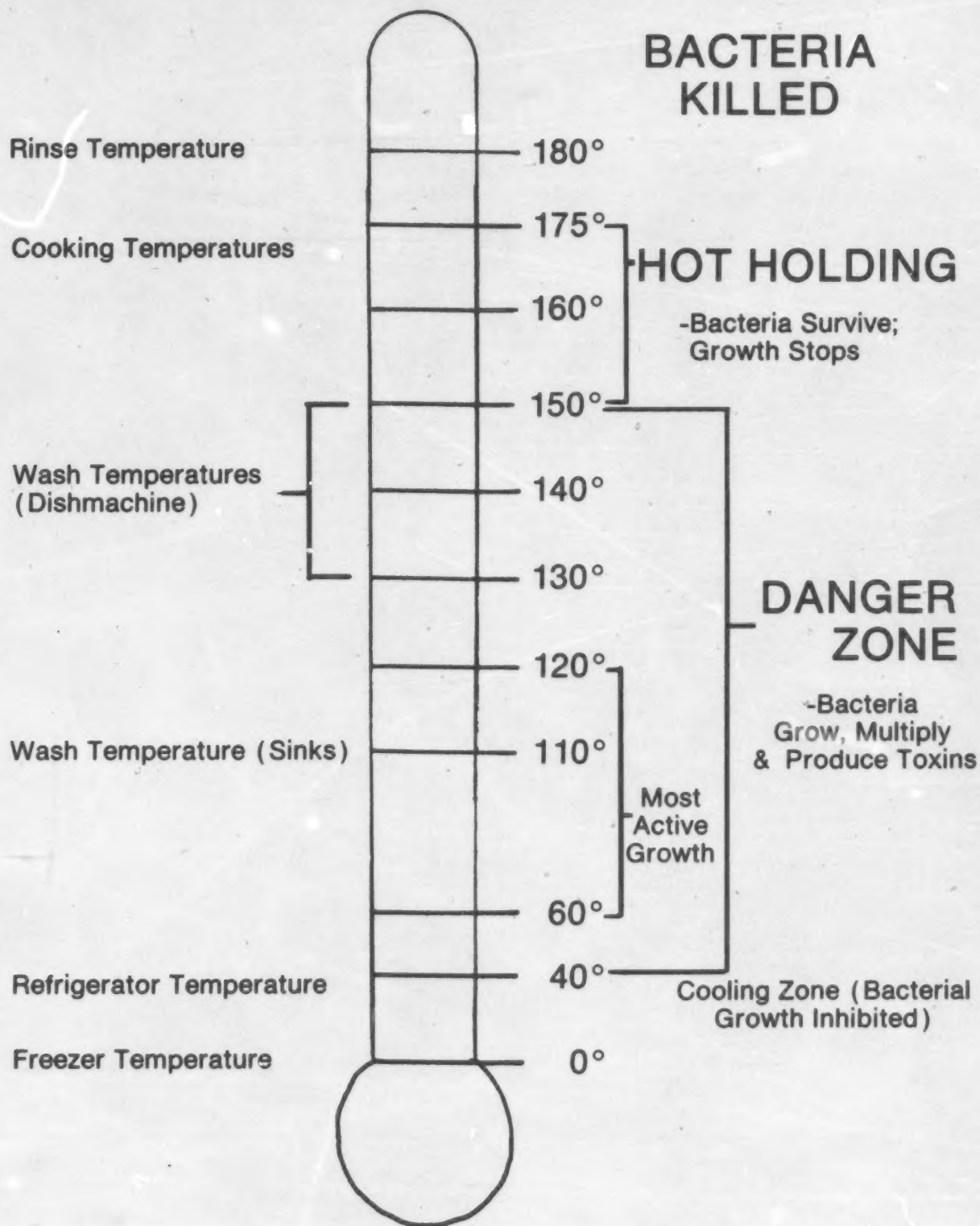
- Heating foods to and holding them at 150°F. or above
- Rapidly cooling foods to and holding them at 40°F. or below

NEUTRAL OR
SLIGHTLY
ACID

- Using high-acid foods or adding acid ingredients

TIME

- Preparing foods just before serving
- Holding foods for short periods of time at temperatures between 40-150°



PROCUREMENT



RECEIVING



STORAGE



PREPARATION → SERVICE → CLEAN-UP



TRANSPORTATION



DRY STOREROOM

- **TEMPERATURE OF 50°—70°F. IS RECOMMENDED**
- **PROPER VENTILATION**
- **CLEAN CONDITIONS**
- **NEATLY AND LOGICALLY ORGANIZED**
- **FOODS STACKED 6'' — 8'' OFF THE FLOOR**
- **WOODEN PALLETS SEALED**
- **FOODS DATED**
- **PROPER LOCATION OF CHEMICALS**

REFRIGERATORS

- **TEMPERATURE OF 40°F. MAXIMUM**
- **THERMOMETER PRESENT**
- **CLEAN SHELVING, FLOORS AND WALLS**
- **FOODS STORED 6" OFF THE FLOOR**
- **FOODS DATED**

FREEZERS

- **TEMPERATURE OF 0°F. MAXIMUM**
- **THERMOMETER PRESENT**
- **CLEAN**
- **NEATLY AND LOGICALLY ORGANIZED**
- **FOODS DATED**

PROCEDURES FOR RAPID CHILLING OF FOODS

1. Immersing pans of food or plastic wrapped foods in ice baths.
2. Immersing packaged food or pans into cold, running water.
3. Putting food in shallow containers (flat pans) when refrigerated.
4. Using walk-in refrigerator with circulating air rather than reach-in refrigeration for initial chilling.
5. Storing foods in large freezer units for approximately a half hour.
6. Agitating of foods such as sauces or gravies with vertical mixers.

TEN BASIC RULES OF SAFE FOOD SERVICE

1. REFRIGERATE FOODS PROPERLY.
2. COOK FOOD THOROUGHLY.
3. REQUIRE STRICT PERSONAL HYGIENE OF ALL FOODSERVICE WORKERS.
4. EXCLUDE INFECTED EMPLOYEES FROM FOOD PREPARATION AND SERVICE.
5. USE EXTREME CARE IN STORING AND HANDLING ANY FOODS PREPARED IN ADVANCE.
6. GIVE SPECIAL ATTENTION TO PREPARATION OF RAW INGREDIENTS WHICH WILL BE ADDED TO FOOD THAT GETS LITTLE OR NO FURTHER COOKING.
7. KEEP HOT FOODS ABOVE 150°F.; COLD FOODS BELOW 40°F.
8. HEAT LEFTOVERS QUICKLY TO TEMPERATURES THAT WILL DESTROY BACTERIA, OR COOL QUICKLY FOR STORAGE.
9. AVOID CARRYING CONTAMINATION FROM RAW TO COOKED FOOD AND READY - TO - SERVE FOODS VIA HANDS, EQUIPMENT, UTENSILS.
10. DISINFECT STORAGE AREAS WITHOUT CONTAMINATING STORED FOOD. CLEAN AND SANITIZE FOOD PREPARATION AND SERVING EQUIPMENT.

COMPARTMENT

1	2	3	4	DRAIN BOARD
SCRAPE RINSE	WATER (110°F.) DETER- GENT FRICTION	HOT, CLEAN WATER	HOT WATER (170°F.) OR SANITIZER & WATER	DRAIN DRY

PREWASH WASH RINSE SANITIZE AIR DRY

PROCEDURES FOR MANUAL SINK

CLEAN BODY

CLEAN CLOTHING

CLEAN FOOD HANDLING TECHNIQUES

FREEDOM FROM DISEASE

KNOWLEDGE

ALERTNESS



**ALL CONTRIBUTE TO
SAFE
FOOD SERVICE**

**Safety & Sanitation
Self-Inspection Sheets**

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DAILY CHECKLIST

Area	Satisfactory	Unsatisfactory	Comments
1. Storage			
A. Dry			
B. Refrigerators			
C. Freezers			
2. Preparation			
A. General Area			
B. Equipment			
1. Ovens			
2. Steamers			
3. Kettles			
4. Mixers			
5. Slicers			
6. Tables			
3. Service			
A. Counters			
B. Steam Tables			
4. Dishmachine			
A. Area			
B. Tables			
C. Machine			
5. Sinks			

SAFETY AND SANITATION INSPECTION SHEET

This inspection sheet is to be used frequently by the school food service manager or her/his employees in order to be assured that safe conditions exist and that good sanitation procedures are being followed.

	Yes	No	Comments
1. <u>Receiving Area:</u>			
a. floors in safe condition			
b. employees instructed in proper methods of handling and transporting containers			
c. garbage cans always covered			
d. garbage containers on dollies to prevent lifting			
e. proper tools available for opening crates, cartons, cases, etc.			
2. <u>Dry Storage Area:</u>			
a. shelving adequate to hold weight of stored items			
b. safe ladder provided for reaching top shelves			
c. fire extinguisher located near door			
d. no exposed soil, waste, or water lines located over storage area			
e. floor racks removable and bottom shelf at least 8" from floor			
f. loose and unwrapped foods stored in rodent proof and insect proof containers			
g. bins, containers, etc., completely emptied and cleaned before refilling			
h. staple food stored in metal or plastic containers with tight fitting covers			
i. no harmful chemicals or cleaning supplies stored next to food items			
j. properly functioning thermometer in area			
3. <u>Coolers and Freezers:</u>			
a. floors in good, clean condition			
b. shelving in safe condition and clean, not rusted			
c. blower fans properly guarded			
d. adequate aisle space			
e. temperature 40°F. (5°C.) or below in coolers			
f. temperature 0°F. (-32°C.) or below in freezers			
g. interior free from accumulated spilled foods			
h. foods placed so air circulates freely			
i. no offensive odors			
j. raw foods not stored above prepared foods			
k. properly functioning thermometer in each unit			
l. food raised off the floor at least 6 inches			
4. <u>Food Preparation Area:</u>			
a. equipment properly grounded			
b. switches located in safe, unobstructed place			
c. floors, walls and ceilings cleaned regularly			
d. employees trained in operation of equipment			

	Yes	No	Comments
e. employees instructed to pick or clean up all dropped items and spillage immediately f. equipment clean and properly stored g. grease and condensation drippings from ventilation hood on range h. thorough cleaning and sanitizing of all work areas and food preparation equipment i. food utensil surfaces free of corrosion, pitting or cracks j. stoves, broilers, fryers, etc., properly hooded with filters and vented k. tops of work tables smooth and free of cracks and crevices l. lighting fixtures in good repair and adequate			
5. <u>Food Service Area:</u>			
a. temperature of hot foods maintained at 150°F. or above b. temperature of cold foods maintained at 40°F. or below c. food protected from contamination d. tongs, forks, scoops, etc., provided for service e. dispensers provided for unwrapped straws f. area clean and in good condition g. silverware stored in clean compartments with handles pointed outward h. examine and dispose of all chipped chinaware, glasses and trays			
6. <u>Dish Return, Dishmachine and Pot and Pan Areas:</u>			
a. floors reasonably free of excessive water and spillage b. safety abrasive strips installed where necessary c. switches readily accessible d. employees instructed in operation of equipment e. adequate drainboard and drying area f. dishwater clean and proper amount of detergent being used g. in mechanical washer, water temperature 130°F-150°F. during wash cycle h. during final rinse in mechanical washer, water temperature is 180°F. or above i. check interior of machine for lime build-up j. check for overloading and improper packing k. automatic detergent and rinse dispenser full and operating properly l. thermometers and pressure gauge on machine in good working order m. removal from racks and sorting done in sanitary manner n. in manual dishwashing proper wash, rinse and sanitizing procedure followed o. dishes immersed in 170°F. rinse water for 30 seconds			

		Yes	No	Comments
p.	if chemical sanitizers are used, an approved chemical in proper amounts in rinse water and adequate supply on hand			
	utensils exposed for sufficient time in washing and sanitizing process			
7.	<u>Personal Hygiene and Health Requisites:</u>			
a.	fingerails clean and short			
b.	hair covering			
c.	no food handler suffering with common cold or other communicable disease			
d.	food handlers free of boils, infections, or cuts			
e.	food handlers use disposable gloves			
f.	chest X-ray or TB test had annually by all personnel			
g.	smoking not permitted in food preparation and storage areas			
8.	<u>Sanitary Facilities:</u>			
a.	lockers provided if changing garments			
b.	toilet, floors, walls, and fixtures cleaned and disinfected			
c.	soap and single-service towels available			
d.	lavatory with hot and cold running water			
e.	area properly ventilated - exhaust fans operating			

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